

Missouri Assessment Program
Spring 2006

Mathematics

Anchor Pages for Released Items

Grade 4

5

Study the information below.

- Ella has 10 yellow jellybeans and 12 red jellybeans.
- Jane has twice as many yellow jellybeans as Ella.
- Jane has three times as many red jellybeans as Ella.

$$\begin{array}{r} 12 \\ 12 \\ \hline 36 \end{array}$$

On the line below, write a number sentence to find the number of Jane's yellow jellybeans.

$$10 \times 2 = 20$$

On the line below, write a number sentence to find the number of Jane's red jellybeans.

$$12 + 12 + 12 = 36$$

MAP Operational 2006
Grade 4 Math
Session 1 Item 5
Score: 2 Anchor

In both cases, the student represents the mathematical situation as a number sentence (horizontal).

Study the information below.


- Ella has 10 yellow jellybeans and 12 red jellybeans.
- Jane has twice as many yellow jellybeans as Ella.
- Jane has three times as many red jellybeans as Ella.

On the line below, write a number sentence to find the number of Jane's yellow jellybeans.

 $3 \times 2 = 9$

On the line below, write a number sentence to find the number of Jane's red jellybeans.

 $12 \times 3 = 36$

| |
|--|
|  |
| MAP Operational 2006 Grade 4 Math Session 1 Item 5 Score: 1 Anchor |
| The first component is incorrect. In the second component, the student represents the mathematical situation as a number sentence (horizontal). |

5

Study the information below.

- Ella has 10 yellow jellybeans and 12 red jellybeans.
- Jane has twice as many yellow jellybeans as Ella.
- Jane has three times as many red jellybeans as Ella.

On the line below, write a number sentence to find the number of Jane's yellow jellybeans.

5 yellow beans

On the line below, write a number sentence to find the number of Jane's red jellybeans.

36 red jelly beans

| |
|--|
| <div>☰</div> <p>MAP Operational 2006 Grade 4 Math Session 1 Item 5 Score: 0 Anchor</p> <p>In both cases, the student did not represent the mathematical situation as a number sentence (horizontal).</p> |
|--|

- 11 Nathan emptied his coin jar and counted the number of coins shown below.



10 quarters



12 nickels



11 dimes



17 pennies

In the box below, show your work to find the *total* value of the coins and write your answer on the line.

$$\begin{array}{r} \$2.50 \\ \$0.60 \\ \$1.10 \\ \$0.17 \\ \hline \$4.37 \end{array}$$

\$4.37



MAP Operational 2006
Grade 4 Math
Session 1 Item 11
Score: 2 Anchor

The student has a correct answer of \$4.37 on the answer line.
For work, the student has a correct process, $\$2.50 + .60 + 1.10 + .17 = 4.37$.

11

Nathan emptied his coin jar and counted the number of coins shown below.



10 quarters



12 nickels



11 dimes



17 pennies

In the box below, show your work to find the **total** value of the coins and write your answer on the line.

$$\begin{array}{r}
 10 \times 25 = 250 \\
 12 \times 5 = 60 \\
 11 \times 10 = 110 \\
 17 \times 1 = 17 \\
 \begin{array}{r}
 \$2.50 \\
 + .60 \\
 + 1.10 \\
 + .17 \\
 \hline
 \$5.37
 \end{array}
 \end{array}$$

\$5.37

MAP Operational 2006
Grade 4 Math
Session 1 Item 11
Score: 1 Anchor

The student has an incorrect answer of \$5.37 on the answer line due to an error in computation. The student has a correct process, $\$2.50 + .60 + 1.10 + .17$, but makes a calculation error that totals 5.37. The student also has correct secondary processes that have the totals for \$2.50, 1.10, .60 and .17. The student is not penalized for not using decimal points consistently in his processes.

11

Nathan emptied his coin jar and counted the number of coins shown below.



10 quarters



12 nickels



11 dimes



17 pennies

In the box below, show your work to find the *total* value of the coins and write your answer on the line.

$$\begin{array}{r}
 17 \\
 12 \\
 11 \\
 + 10 \\
 \hline
 50
 \end{array}$$

\$ 50¢

MAP Operational 2006
 Grade 4 Math
 Session 1 Item 11
 Score: 0 Anchor
 The student has an incorrect answer of 50 cents.
 The student also has an incorrect process.

14

The table below shows the amount of time Madison spends exercising each day. She will continue this pattern of exercise for seven days.

EXERCISE TIME

| Day | Number of Minutes |
|-----|-------------------|
| 1 | 15 |
| 2 | 25 |
| 3 | 35 |

How many minutes will Madison exercise on Day 7? In the box below, show your work and write your answer on the line.

| | | | | | | | |
|-----------|----|----|----|----|----|----|----|
| Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| # of Min. | 15 | 25 | 35 | 45 | 55 | 65 | 75 |

75 minutes

MAP Operational 2006

Grade 4 Math

Session 1 Item 14

Score: 2 Anchor

The student has the correct answer of 75 minutes. For work, the student continues the pattern to Day 7, 75 minutes.

- 14 The table below shows the amount of time Madison spends exercising each day. She will continue this pattern of exercise for seven days.

EXERCISE TIME

| Day | Number of Minutes |
|-----|-------------------|
| 1 | 15 |
| 2 | 25 |
| 3 | 35 |

How many minutes will Madison exercise on Day 7? In the box below, show your work and write your answer on the line.

add 10

75 minutes

MAP Operational 2006

Grade 4 Math

Session 1 Item 14

Score: 1 Anchor

The student has the correct answer of 75 minutes. The student writes, "add 10," but has no starting or ending point in the process.

- 14 The table below shows the amount of time Madison spends exercising each day. She will continue this pattern of exercise for seven days.

EXERCISE TIME

| Day | Number of Minutes |
|-----|-------------------|
| 1 | 15 |
| 2 | 25 |
| 3 | 35 |

How many minutes will Madison exercise on Day 7? In the box below, show your work and write your answer on the line.

| | |
|-------------------------------------|--|
| Each day increases by 15 min. | Day 4 = 50 Day 5 = 65 Day 6 = 80 Day 7 = 95 |
| <u>95</u> minutes | |

MAP Operational 2006

Grade 4 Math

Session 1 Item 14

Score: 0 Anchor

The student has an incorrect answer of 95 minutes. For work, the student incorrectly concludes, "Each day increases by 15 min." He uses this incorrect assumption by adding 15 to Day 3 through Day 7, arriving at 95.


19

Study the number pattern. On the lines below, write the next two numbers that continue the pattern.

1, 2, 4, 7, 11, 16

On the lines below, write the rule for the pattern.

You first add 1 then add 2 then add
3 then add 4 then add 5 and
thats they're pattern.

| |
|---|
|  |
| MAP Operational 2006 Grade 4 Math Session 1 Item 19 Score: 2 Anchor The student correctly continues the pattern with 11 & 16. The student's rule for the pattern is correct: You first add 1 then add 2 then add 3 then add 4 then add 5..... |

19

Study the number pattern. On the lines below, write the next two numbers that continue the pattern.

1, 2, 4, 7, 11, 16

On the lines below, write the rule for the pattern.

I that answer by
conting by 4 & 5,

MAP Operational 2006

Grade 4 Math

Session 1 Item 19

Score: 1 Anchor

The student correctly **continues the** pattern with 11 & 16.

The student's rule for the **pattern is** incorrect. Explains how they got the last 2 numbers rather than **explaining** the rule.

19

Study the number pattern. On the lines below, write the next two numbers that continue the pattern.

1, 2, 4, 7, 9, 11

On the lines below, write the rule for the pattern.

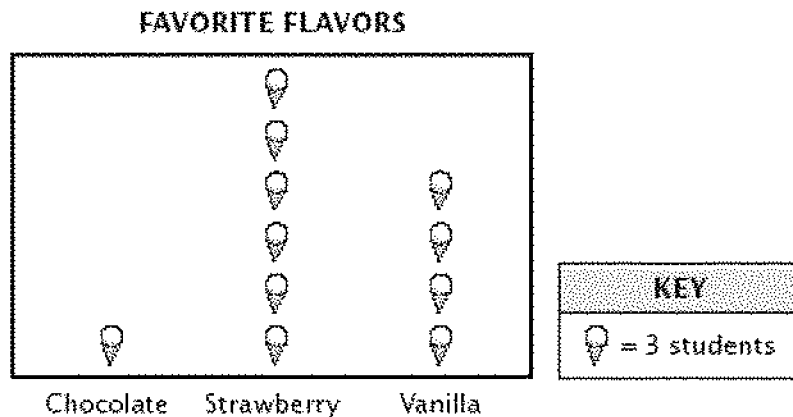
they count by twos



MAP Operational 2006
Grade 4 Math
Session 1 Item 19
Score: 0 Anchor
The student has incorrect numbers of 9 & 11.
The student's rule for the pattern is incorrect.

23

Ms. Jones took a survey of her class to find their favorite ice cream flavors. The pictograph below shows the results.



How many more students chose strawberry as their favorite flavor rather than chocolate and vanilla combined? In the box below, show your work and write your answer on the line.

Strawberry

$$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$$

Vanilla and Chocolate

$$\begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 18 \\ - 15 \\ \hline 3 \end{array}$$

_____ students

MAP Operational 2006

Grade 4 Math

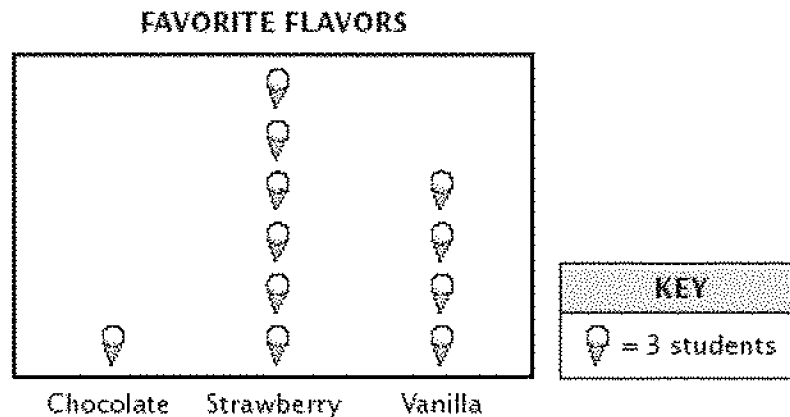
Session 1 Item 23

Score: 2 Anchor

The student has a correct answer of 3 on the answer line.

For work, the student has a correct process, $18 - 15 = 3$ and processes, Strawberry $6 \times 3 = 18$ and Vanilla and Chocolate $5 \times 3 = 15$. The other process, $1 + 4 = 5$, was done mentally.

- 23 Ms. Jones took a survey of her class to find their favorite ice cream flavors. The pictograph below shows the results.



How many more students chose strawberry as their favorite flavor rather than chocolate and vanilla combined? In the box below, show your work and write your answer on the line.

chocolate
3

Strawberry
18

Vanilla
12

3 students

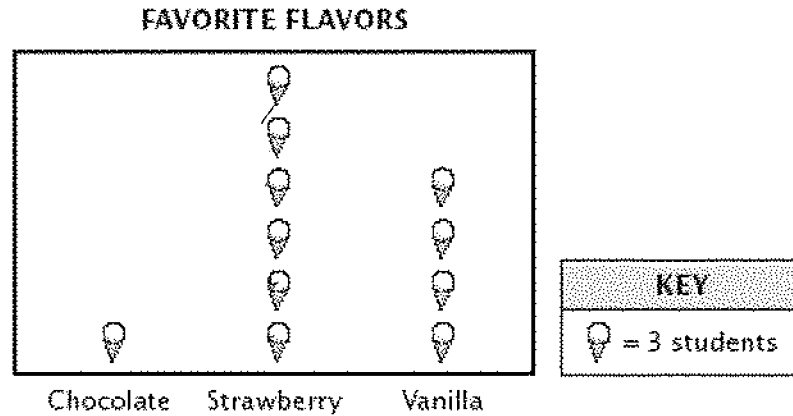
MAP Operational 2006
Grade 4 Math
Session 1 Item 23
Score: 1 Anchor

The student has a correct answer of 3 on the answer line.

The process, Chocolate plus Vanilla $12 + 3 = 15$ and the process, $18 - 15 = 3$, are missing, so it is not clear how the student got the answer, 3. The processes, Strawberry $6 \times 3 = 18$, Chocolate $1 \times 3 = 3$, Vanilla $4 \times 3 = 12$, were done mentally and the student shows these totals in the workspace.

23

Ms. Jones took a survey of her class to find their favorite ice cream flavors. The pictograph below shows the results.



How many more students chose strawberry as their favorite flavor rather than chocolate *and* vanilla combined? In the box below, show your work and write your answer on the line.

$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

18 students

MAP Operational 2006

Grade 4 Math

Session 1 Item 23

Score: 0 Anchor

The student has an incorrect answer of 18 on the answer line.

The student has not shown how to find the answer for the prompt.

25

The class was asked to *estimate* the number sentence below.

$$12 \times 11 = ?$$

In the box below, explain how Nikko *estimated* that the answer is more than 100.

100 Nikko estimated it was more than
because $10 \times 10 = 100$

In the box below, explain how Juanita used *estimation* to find that the answer is about 120.

Juanita estimated about 120 because she
know $10 \times 12 = 120$ and 11 is close to 10.



MAP Operational 2006

Grade 4 Math

Session 1 Item 25

Score: 2 Anchor

The explanation for Nikko is correct indicating rounding both numbers down to $10 \times 10 = 100$. The explanation for Juanita is correct with a solution of rounding 11 down so that $12 \times 10 = 120$.

- 25 The class was asked to *estimate* the number sentence below.

$$12 \times 11 = ?$$

In the box below, explain how Nikko *estimated* that the answer is more than 100.

because $10 \times 10 = 100$

In the box below, explain how Juanita used *estimation* to find that the answer is about 120.

She probably thought $12 \times 11 = 121$



MAP Operational 2006

Grade 4 Math

Session 1 Item 25

Score: 1 Anchor

The **explanation for Nikko is correct** indicating rounding both numbers down to $10 \times 10 = 100$. The **explanation for Juanita is incorrect** and does not show estimation; it utilizes the numbers from the prompt.

25

The class was asked to *estimate* the number sentence below.

$$12 \times 11 = ?$$

In the box below, explain how Nikko *estimated* that the answer is more than 100.

He knows that it is more than 100.

In the box below, explain how Juanita used *estimation* to find that the answer is about 120.

She knows that it is about 120.



MAP Operational 2006

Grade 4 Math

Session 1 Item 25

Score: 0 Anchor

The explanation for Nikko is incorrect. The explanation for Juanita is also incorrect. Each response contains information from the prompt and nothing additional.

- 30 A baker recorded the numbers of each item sold during five days, as shown in the table below. Complete the table to show the totals sold.

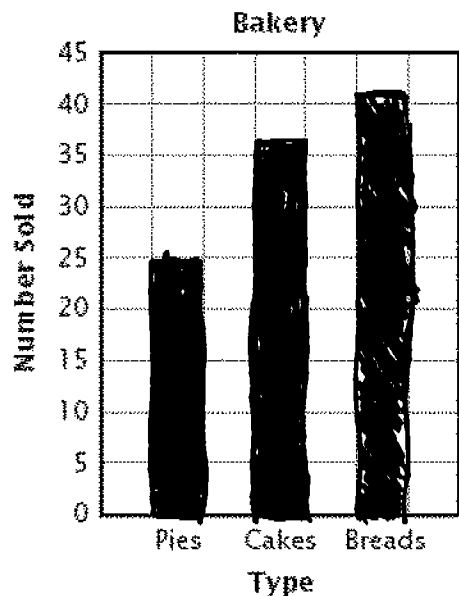
BAKERY

| Day | Pies | Cakes | Breads | Total Items Sold |
|-----------|------|-------|--------|------------------|
| Monday | 4 | 6 | 8 | 18 |
| Tuesday | 3 | 4 | 6 | 13 |
| Wednesday | 10 | 13 | 15 | 38 |
| Thursday | 3 | 5 | 6 | 14 |
| Friday | 5 | 9 | 7 | 21 |
| Total | 25 | 37 | 42 | 104 |

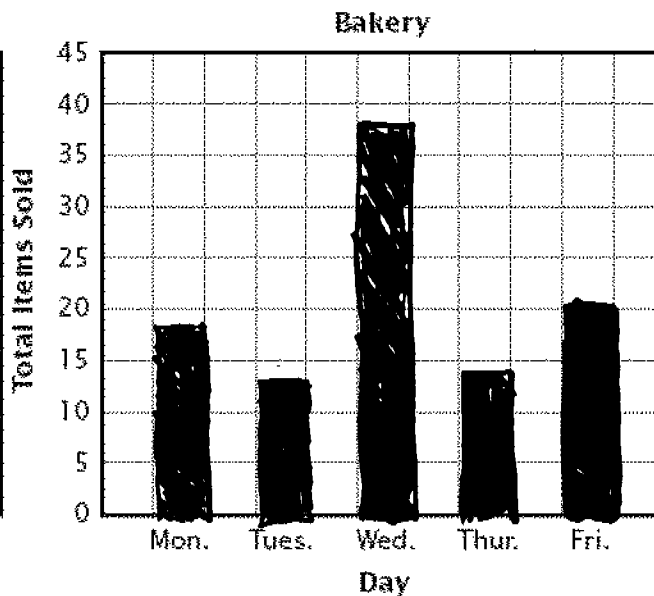
$$\begin{array}{r} 25 \\ 37 \\ 42 \\ \hline 104 \end{array}$$

The baker wants to display the data in 2 different ways. Use the data from the table to complete Bar Graph A and Bar Graph B below.

BAR GRAPH A



BAR GRAPH B



Look at the table and Bar Graph B. What information is shown in the table, but not shown in Bar Graph B? On the lines below, explain your answer.

The information that is shown in the table but not Bar Graph B is what they sold like pies, cakes, and breads.

The bakery had a sale one day during the week. On which day of the week do you think the bakery had a sale? On the lines below, explain your answer using the information from the graphs.

I think the day of the week they had a sale was Wednesday.

Look at Bar Graph A. On the lines below, write a question that can be answered only from the information in Bar Graph A.

How many total pies were sold that week at the Bakery?

MAP Operational 2006

Grade 4 Math

Session 1 Item 30

Score: 4 Anchor

Fully addresses the event

Completes the table demonstrating a command of basic number sense.

Presents information correctly in bar graph form. Is able to identify important distinguishing features of the data being compared (the first and third question) and makes a valid projection (Wed.) but does not include an explanation.

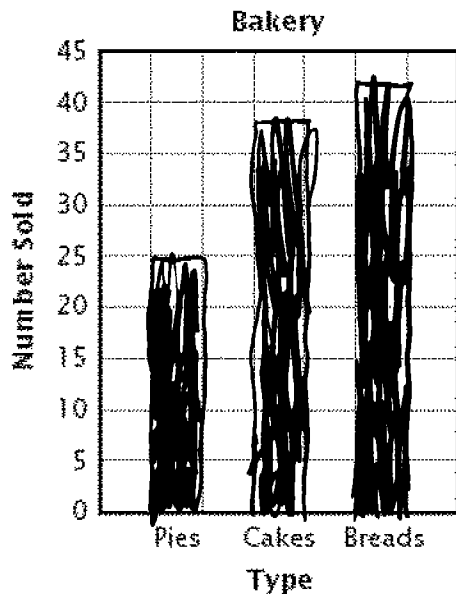
- 30 A baker recorded the numbers of each item sold during five days, as shown in the table below. Complete the table to show the totals sold.

BAKERY

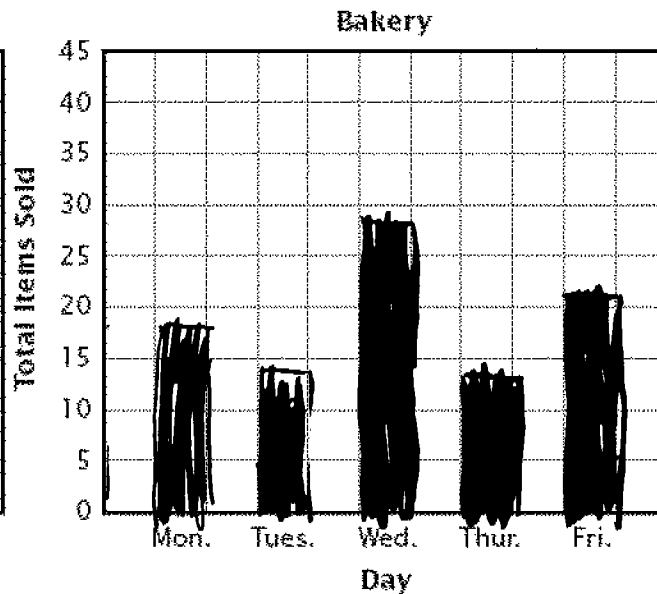
| Day | Pies | Cakes | Breads | Total Items Sold |
|-----------|------|-------|--------|------------------|
| Monday | 4 | 6 | 8 | 18 |
| Tuesday | 3 | 4 | 6 | 14 |
| Wednesday | 10 | 13 | 15 | 28 |
| Thursday | 3 | 5 | 6 | 14 |
| Friday | 5 | 9 | 7 | 21 |
| Total | 25 | 37 | 42 | 104 |

The baker wants to display the data in 2 different ways. Use the data from the table to complete Bar Graph A and Bar Graph B below.

BAR GRAPH A



BAR GRAPH B



Look at the table and Bar Graph B. What information is shown in the table, but not shown in Bar Graph B? On the lines below, explain your answer.


Things that are not shown in
Bar Graph B is Pies Cakes
Breads are not in Bar Graph B.

The bakery had a sale one day during the week. On which day of the week do you think the bakery had a sale? On the lines below, explain your answer using the information from the graphs.

The week that sold
thinks was Thursday.

Look at Bar Graph A. On the lines below, write a question that can be answered *only* from the information in Bar Graph A.

How many Pies Cakes and Breads
all together.

| |
|--|
|  |
| MAP Operational 2006 Grade 4 Math Session 1 Item 30 Score: 3 Anchor Substantially addresses the event Completes the table demonstrating a command of basic number sense (two incorrect totals). Presents information correctly in bar graph form (bars match comp. errors). Is able to identify important distinguishing features of the data being compared (the first question). Makes an incorrect projection. The 3rd question is correct. |

30

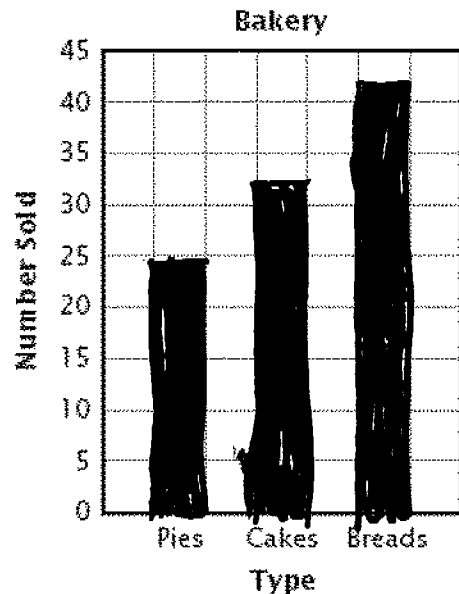
A baker recorded the numbers of each item sold during five days, as shown in the table below. Complete the table to show the totals sold.

BAKERY

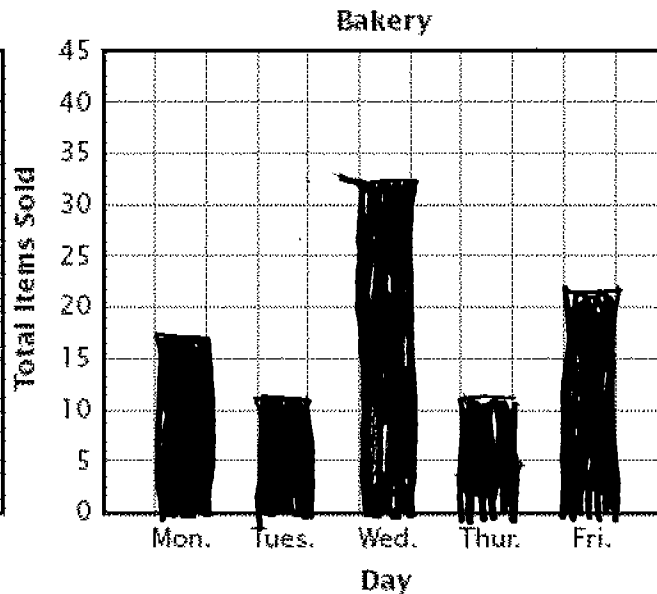
| Day | Pies | Cakes | Breads | Total Items Sold |
|-----------|------|-------|--------|------------------|
| Monday | 4 | 6 | 8 | 18 |
| Tuesday | 3 | 4 | 6 | 13 |
| Wednesday | 10 | 13 | 15 | 38 |
| Thursday | 3 | 5 | 6 | 14 |
| Friday | 5 | 9 | 7 | 21 |
| Total | | | | |

The baker wants to display the data in 2 different ways. Use the data from the table to complete Bar Graph A and Bar Graph B below.

BAR GRAPH A



BAR GRAPH B



Look at the table and Bar Graph B. What information is shown in the table, but not shown in Bar Graph B? On the lines below, explain your answer.

There's no information of how many food was sold.

The bakery had a sale one day during the week. On which day of the week do you think the bakery had a sale? On the lines below, explain your answer using the information from the graphs.

I think it's wednesday.

Look at Bar Graph A. On the lines below, write a question that can be answered only from the information in Bar Graph A.

How many total of food all together do you think there is.

MAP Operational 2006

Grade 4 Math

Session 1 Item 30

Score: 2 Anchor

Partially addresses the event

Completes one column in the table demonstrating some basic number sense. They correctly graph some data. There are graphing errors on pies and cakes in Bar Graph A and an error on Wed. in Bar Graph B. Some data not supplied in the table is correctly graphed. The attempt to analyze data and differentiate by correctly comparing the table and Bar Graph B is vague. Student does show some ability to form a conclusion based on data by choosing Wed. although no explanation is provided. 3rd question is correct.

30

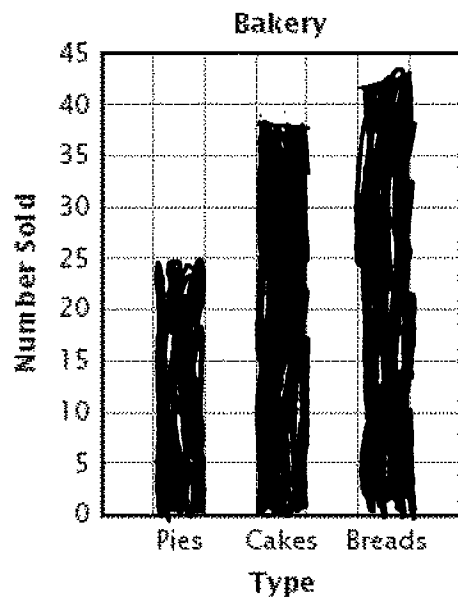
A baker recorded the numbers of each item sold during five days, as shown in the table below. Complete the table to show the totals sold.

BAKERY

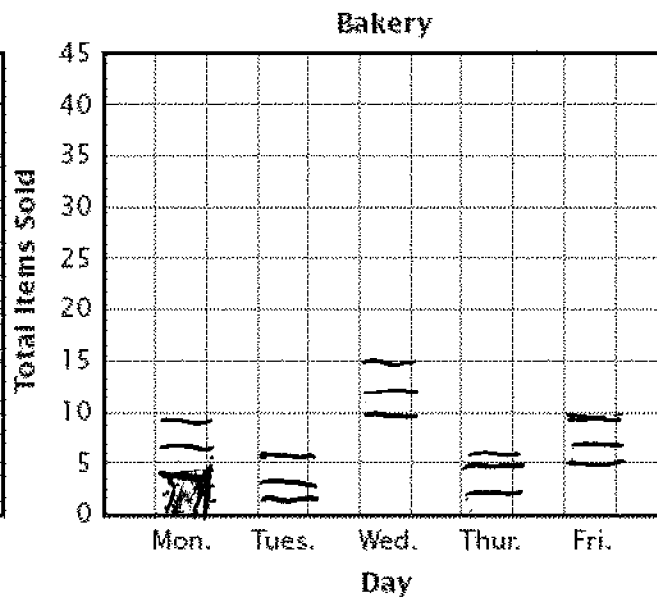
| Day | Pies | Cakes | Breads | Total Items Sold |
|-----------|------|-------|--------|------------------|
| Monday | 4 | 6 | 8 | |
| Tuesday | 3 | 4 | 6 | |
| Wednesday | 10 | 13 | 15 | |
| Thursday | 3 | 5 | 6 | |
| Friday | 5 | 9 | 7 | |
| Total | 25 | 37 | 42 | |

The baker wants to display the data in 2 different ways. Use the data from the table to complete Bar Graph A and Bar Graph B below.

BAR GRAPH A



BAR GRAPH B



Look at the table and Bar Graph B. What information is shown in the table, but not shown in Bar Graph B? On the lines below, explain your answer.

The number not the
line.

The bakery had a sale one day during the week. On which day of the week do you think the bakery had a sale? On the lines below, explain your answer using the information from the graphs.

Tuesday because it was
low

Look at Bar Graph A. On the lines below, write a question that can be answered *only* from the information in Bar Graph A.

Which sold more?

MAP Operational 2006
Grade 4 Math
Session 1 Item 30
Score: **1 Anchor**
Minimally addresses the event
Completes **one** column in the table and correctly graphs the data for it
Question **three** does refer to items which is characteristic of Bar Graph A

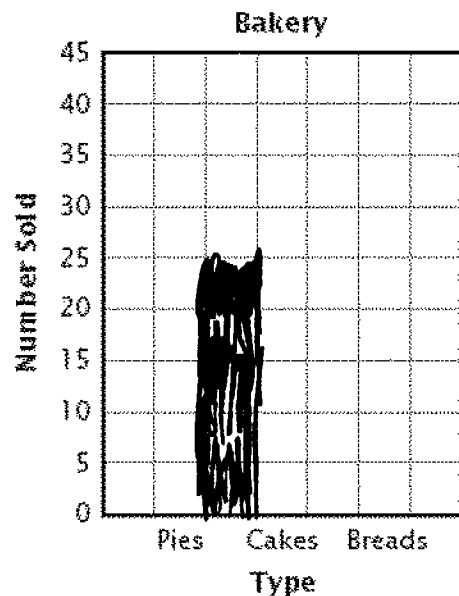
- 30 A baker recorded the numbers of each item sold during five days, as shown in the table below. Complete the table to show the totals sold.

BAKERY

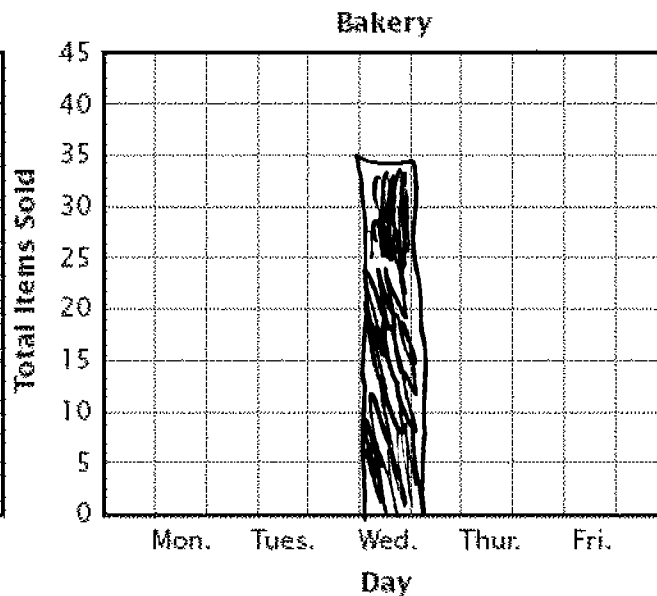
| Day | Pies | Cakes | Breads | Total Items Sold |
|-----------|------|-------|--------|------------------|
| Monday | 4 | 6 | 8 | |
| Tuesday | 3 | 4 | 6 | |
| Wednesday | 10 | 13 | 15 | |
| Thursday | 3 | 5 | 6 | |
| Friday | 5 | 9 | 7 | |
| Total | | | | |

The baker wants to display the data in 2 different ways. Use the data from the table to complete Bar Graph A and Bar Graph B below.

BAR GRAPH A



BAR GRAPH B



Look at the table and Bar Graph B. What information is shown in the table, but not shown in Bar Graph B? On the lines below, explain your answer.

I did that 25
35. & added?

The bakery had a sale one day during the week. On which day of the week do you think the bakery had a sale? On the lines below, explain your answer using the information from the graphs.

I think they did not
have a sale

Look at Bar Graph A. On the lines below, write a question that can be answered only from the information in Bar Graph A.

How many pies and cakes
are there.



MAP Operational 2006
Grade 4 Math
Session 1 Item 30
Score: 0 Anchor
Work indicates no mathematical understanding of the task.